U. S. FOREST SERVICE

RESEARCH NOTE NC-109

NORTH CENTRAL FOREST EXPERIMENT STATION, FOREST SERVICE—U.S. DEPARTMENT OF AGRICULTURE

Folwell Avenue, St. Paul, Minnesota 55101

# MAPLE FLOORING — HOW ARCHITECTS VIEW IT

**ABSTRACT. — In a study of architects' opinions of maple flooring versus vinyl asbestos tile for school gymnasiums, resiliency and durability were found to be important factors favoring maple whereas vinyl asbestos tile was felt to be less costly and more dimensionally stable.**

**OXFORD: 833.18:176.1** *Acer saccharum*

Producers of maple flooring are concerned about their shrinking markets. Originally, maple was widely used in residential, industrial, and institutional construction. But with the increased competition by substitute flooring materials, maple has been gradually replaced by oak, resilient tile, and carpeting in new residential construction, and by low-cost floors, such as finished concrete, in industrial applications.

Always a favorite for gymnasiums, maple flooring has become increasingly dependent on this specialty market. By 1966 three-fourths of the shipments of maple flooring by members of the Maple Flooring Manufacturers Association were destined for new gymnasium construction.

To insure continuance of this crucial market, maple flooring producers are engaged in a promotional program designed to persuade architects to specify their product. To be most effective, such a promotional program should be geared to exploit those attributes of maple flooring that architects feel are most favorable and minimize the effect of characteristics felt to be undesirable. The necessary information for such a program was obtained by evaluating architects' opinions of maple flooring.

## PROCEDURE

School boards in large metropolitan areas often include a staff architect who acts as liaison between the school board and an architectural firm engaged to design a school. In this unique position he greatly influences the design of the structure and materials to be used.[1]

[1] *See Architectural organizations, Part 1, Sect. 3, Selling architects and engineers, p. 15, F. W. Dodge Corporation, 16 p., 1962.*

Staff architects employed by the school boards of the cities of St. Paul, Milwaukee, Chicago, and Detroit were interviewed during the summer of 1968. In addition, an architectural firm specializing in school construction in each of the above cities, plus Minneapolis, was included in the survey, bringing the total sample to nine architects. Since the sample was not chosen by strict adherence to a statistical design, the study results can be applied only to a small, but important, group of architects.

An attitude-measuring technique was used in ascertaining the opinions of this group.[2] The architects were asked to assume that they had been selected to design a new junior high school gymnasium and were contemplating the use of one of two common floor systems: (1) hard maple strips laid over sleepers and subflooring or (2) vinyl asbestos tile laid in mastic directly over the slab.

Architects have wide latitude in choosing flooring materials for a gymnasium at the junior high school level. High school and college gymnasiums are mostly for athletic events; thus hardwood flooring (generally maple) is commonly used. Elementary school gymnasiums, on the other hand, often serve as all-purpose rooms, and vinyl asbestos flooring is used most. Thus, a junior high school gymnasium was selected for consideration with vinyl asbestos flooring as an alternate for maple.

We then recited factors that might influence the architects' choice of a flooring material for this hypothetical gymnasium. They were asked to relate each factor to both maple and vinyl asbestos flooring, decide how important the factor would be in their selection, and qualify its importance by one of the responses on a hand-out card.

## RESULTS

The function that a floor will serve is the primary consideration in choosing a material. The chief function of the floor in a junior high school gymnasium is to provide a proper base for athletic sports. Hence, the main concern is resiliency: the support afforded athletes; the bounce imparted to a ball. In choosing between the two flooring materials there was no contest: maple was highly favored for this factor (fig. 1). Conversely, resiliency was regarded as a very important reason for not using vinyl asbestos tile for this hypothetical gymnasium.

Other reasons given for using maple flooring were durability and tradition. While admitting that tradition was important in their choice, they often hedged with the statement, "tradition based on fact."

On the other hand, the architects felt that the relatively high cost of maple flooring inhibits its use. Factors pertaining to cost such as initial installed cost, ease of installation, and restricted budget were judged reasons for not using maple flooring for this gymnasium. Also, the related factor, maintenance, favored vinyl asbestos over maple flooring in their opinion.

From the profile we can perceive other patterns in the architects' responses. Factors pertaining to the dimensional instability of wood when subjected to moisture and the resulting possibility of an unsatisfactory floor were felt to be reasons for not using maple flooring. Dimensional stability, possible temperature and moisture variations, and use below grade

---

[2] *For a comprehensive and lucid discussion of the methods of using scaling devices to measure attitudes see Boyd, Harper W. and Westfall, Ralph. Marketing research. p. 323-336. Homewood, Illinois: Richard D. Irwin, Inc., 791 p., illus., 1964.*

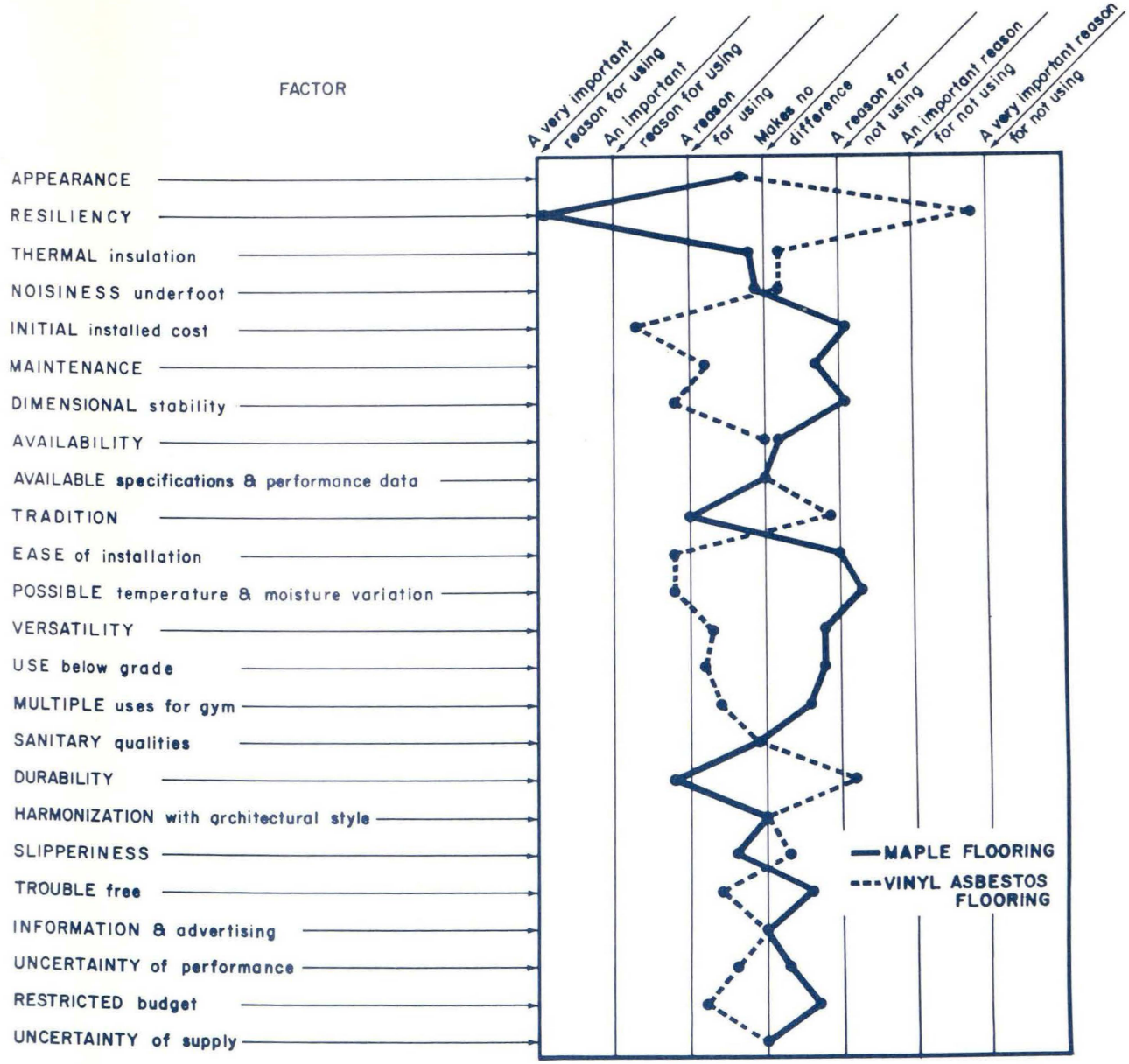


Figure 1. — *Architects' opinions of selected factors.*

were factors favoring vinyl asbestos flooring. Similarly, the two factors designed to measure uncertainty, trouble free (from the architect's view) and uncertainty of performance, were indicated as possible, although less important, reasons for not using maple flooring.

Maple flooring was felt to be less versatile than vinyl asbestos flooring as reflected by their response to versatility and multiple uses for gym. Apparently the possibility that this gymnasium might be used for other purposes such as an auditorium or lunch room discouraged the use of maple flooring.

The architects seemed to feel that the marketing system for maple flooring was equal to that for vinyl asbestos tile as evidenced by their responses to the factors of availability, available specifications and performance data, information and advertising, and uncertainty of supply. Each of these factors was considered relatively unimportant in their choice between vinyl asbestos and maple flooring.

Other factors including appearance, thermal insulating properties, noisiness underfoot, sanitary qualities, and harmonization with architectural style appeared unimportant in the choice between the two types of flooring. Again, it should be emphasized that these opinions can only be evaluated within the context of the posed situation.

From the opinions expressed by the architects we would expect them to favor and specify maple flooring for gymnasiums. This proved to be the case as evidenced by a survey of the gymnasiums that they had designed, or assisted in designing, over the previous 3 years. Of 301 gymnasiums represented, 178 had maple floors, 122 had vinyl asbestos floors (but all of these were elementary all-purpose rooms), and 1 had oak parquet. Thus, the architects' choices of materials accurately reflected their opinions.

When the primary function of the gymnasium was to house athletic events (gyms for junior high and upper educational levels), the comparative resiliency of the floors was of utmost importance and maple was specified. When the gymnasium was to serve multiple purposes, other factors such as initial cost, maintenance, and assumed versatility of the flooring were important and vinyl asbestos was chosen.

Apparently maple flooring will continue to be an important product in new gymnasium construction in the important midwest market. However, new synthetic flooring materials are being developed which reportedly offer the resiliency of maple. If such a product should emerge at a competitive price, maple flooring producers could suffer further inroads into this important market. Dimensional instability and uncertainty of performance discourage the use of maple flooring. Also, architects feel that maple flooring is difficult to maintain, prohibiting its more widespread use.

## WHAT SHOULD BE DONE?

In planning a promotion program the industry should continue to accentuate the positive attributes of its product. In addition, the possible effect of undesirable attributes and the chance of faulty installation should be minimized. Several of the expressed opinions are probably incorrect, thereby pointing out a promotional need. Thus the program should seek to accurately describe the proper installation procedures for the different flooring systems and how each can be expected to perform under different conditions. For example, the resiliency among wood floors can vary greatly depending on the system used to install the flooring. The installation system also has an important effect on the dimensional stability of the finished floor — a factor that was found to deter the use of maple.

Following installation, the maintenance of a maple floor is important to its performance. A promotional program should be designed to keep architects and those concerned with maintenance aware of proper maintenance procedures and how these change with the advent of improved finishes, equipment, and techniques.

GARY R. LINDELL
Market Analyst
(Office maintained in
cooperation with the
1971 University of Minnesota - Duluth)